

# BRIDGE CHALLENGER

DEAL # 1                    S 84  
SET# 2                    H AJ  
BID=3N                    D AQ6  
YOU 9 THEY 4            C K86432

S K93	S 65
H 10432	H KQ97
D K84	D J109752
C J109	C 5
	S AQJ1072
	H 865
	D 3
	C AQ7

WANT TO REPLAY THIS HAND? \_

## A Bridge Playing Program For the TRS-80 Level II 16K RAM

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# BRIDGE CHALLENGER

BRIDGE CHALLENGER is designed for all bridge players from novices to experts who would like to practice and improve their play. Since a standard game of contract bridge requires four players, it is difficult to study the game on your own time under realistic conditions. With BRIDGE CHALLENGER, you and the dummy play as the declaring team against the computer, which plays a skillful defense. The program will deal hands at random or according to your specifications for high card points. You can then rotate the hands to play North, South, East or West. At the end of the deal all four hands are displayed, and you can replay your hand now that the cards are known, shuffle only the defense hands, or move on to another deal. The computer keeps track of all four hands and displays them in standard bridge form on the screen. You can stop and examine the previous trick at any point, or review all thirteen tricks at the end of a deal. You can save deals on cassette and reload them for later play. You don't even need a deck of cards to practice your game with BRIDGE CHALLENGER!

## HOW IS BRIDGE PLAYED?

If you aren't familiar with the game of bridge, you can learn with the aid of BRIDGE CHALLENGER and any of the standard bridge textbooks. The basic rules are explained below for your convenience. Bridge is played with a standard deck of playing cards and four players. The deck is dealt evenly to all four players so that each player receives a hand of thirteen cards. Then each player sorts his hand according to suit, and from high card to low card in each suit (aces are high). The four players' hands are called North, South, East and West, and players usually sit around a table with the two teams, North-South and East-West, facing each other.

**Bidding:** Before the deal is actually played, each team member attempts to communicate the strength of his hand to his partner through a process calling bidding. Bidding is a complex process separate from the play itself, which results in a contract or agreement between the partners in one team (called the declaring team) as to how many tricks the team plans to take and which suit will be trumps in this deal (see below). The first six tricks taken by the declaring team is called a "book". The book must be taken before any tricks are counted towards the actual contract. For example, a contract of "3 Hearts" indicates that the declaring team plans to take six tricks for the book, plus an additional three tricks for a total of nine out of thirteen tricks. Hearts would be the trump suit for this contract.

**Playing:** Once a contract has been established, the player to the left of the declarer leads a card. At this time, the other member of the declaring team displays his hand on the table as the "dummy." The playing then continues in a clockwise direction. Each player contributes one card to the trick, and the highest card takes the trick.



When all of the cards have been played, each team counts the number of tricks taken between them to determine whether or not the contract has been fulfilled by the declaring team. If the contract has not been fulfilled, the declarer is said to have "gone set." (In BRIDGE CHALLENGER, the dummy's hand is displayed opposite yours on the screen, and you select a contract. The computer plays the defense and keeps track of the number of tricks taken.)

**Tricks:** As mentioned above, the player to the left of the declarer leads the first card. Thereafter, the player who wins each trick leads the first card of the next trick, and play continues in a clockwise direction. Whenever possible, each player must follow suit (i.e. play a card of the same suit as the card led). However, if he has no cards left of that suit, he can play any other card in his hand, including a trump card (a card of the contract suit). If he plays a trump, he automatically wins the trick unless a trump of higher value is played by another player.

By remembering which cards were played by each player as the deal progresses, you can determine with increasing certainty the cards still held by your opponents. Of course, your opponents will at the same time try to determine which cards are still in your hand. Sophisticated players may deliberately play an unexpected card in order to mislead you as to which cards are still in their hands. BRIDGE CHALLENGER includes a number of algorithms to determine which card is the best to play based on the probable contents of your and its partner's hands, making it an excellent opponent for you!

## HOW TO USE BRIDGE CHALLENGER

BRIDGE CHALLENGER includes several options for dealing hands and playing out the tricks for each deal. In order to familiarize you with its operation, several examples of the use of BRIDGE CHALLENGER will be given below, and then the various options and commands you can use will be summarized. Responses entered from the keyboard are printed in bold type below.

### RUN

YOU HAVE SEVERAL OPTIONS:

1. PLAY A COMPUTER DEALT HAND
2. SET UP YOUR OWN DEAL
3. LOAD AND PLAY A DEAL FROM TAPE
4. DEAL AND SAVE SPECIAL DEALS
5. DEAL AND PLAY SPECIAL DEALS

WHICH OPTION WOULD YOU LIKE? **1**

WHAT SET OF HANDS? **2**

PLEASE WAIT WHILE I DEAL.

(Screen erases.) Here we will play a computer dealt hand. The computer uses its random number generator to construct a long sequence of randomly selected cards, from which it assembles and deals a deck of cards. The number you enter in response to WHAT SET OF HANDS? is a "seed" for the random number generator: a

different seed number will result in a different sequence of randomly selected cards. Thus, you can generate a deal of particular interest on another run of the program by entering the same number as before for WHAT SET OF HANDS?. If you had played through a whole series of deals on your previous run of the program, you can skip down to the particular deal of interest using the SKIP option described below.

DEAL NO. 1	S	J8762
	H	AK8
	D	54
	C	J103
	S	KQ43
	H	9642
	D	J9
	C	Q75

The top hand is the dummy's, and the bottom one is your hand. Your opponents' hands (East-West) are of course hidden from view. Here S stands for Spades, H for Hearts, D for Diamonds, C for Clubs, A for Ace, K for King and so on. Both hands are already sorted.

WHAT CONTRACT? **SKIP**  
SKIP TO WHAT DEAL? **5**

If the first deal is not interesting, or if you wish to reach a particular deal of interest from a previous run, you can ask the computer to continue dealing. The program will run through its sequence of randomly selected cards until it reaches the 5th complete deck, and then deal out the cards again.

DEAL NO. 5	S	KJ73
	H	KQJ2
	D	63
	C	Q102
	S	A109852
	H	96
	D	10
	C	KJ64

WHAT CONTRACT? **4S**

Here you have indicated that your team will attempt to take six tricks for the book plus four additional tricks. Spades will be the trump suit. (Enter the level of the bid first, then the suit.) Now the play begins with a card led by your left hand opponent.

LHO PLAYS D2  
WHAT PLAY FROM DUMMY? **D3**  
RHO PLAYS DK  
HAND PLAYS D10

(To indicate which card you wish to play, enter the suit first, then the card rank.) Since your hand had only a singleton Diamond, the computer automatically played this card for you. Your right hand opponent won this trick. The screen now erases, and the computer calculates which cards remain in each hand and displays your and the dummy's hands.

DEAL NO. 5	S	KJ73
BID 4S	H	KQJ2
YOU 0	D	6
THEY 1	C	Q102
	S	A109852
	H	96
	D	
	C	KJ64

RHO PLAYS H7  
WHAT PLAY FROM YOUR HAND? **LAST**  
D3 DK D10 D2  
WHAT PLAY FROM YOUR HAND? **H6**  
LHO PLAYS HA  
WHAT PLAY FROM DUMMY? **H2**

**LAST** indicates that you would like to see the cards that were played on the previous trick. The first card shown (D3) is the dummy's; the remaining cards are displayed clockwise from the hands. Here your left hand opponent won the trick. Assuming that you play fairly well, this deal might be played through the next seven tricks to arrive at the following:

DEAL NO. 5	S	73
BID 4S	H	Q
YOU 7	D	
THEY 3	C	
	S	109
	H	
	D	
	C	K

WHAT PLAY FROM YOUR HAND? **CLAIM**

At this point you might have determined from the cards previously played that you and the dummy hold cards sufficient to win all the remaining tricks. You indicate this to the computer by entering **CLAIM**. The program will play all four hands out for the remaining tricks to check your claim.

HAND PLAYS S9  
LHO PLAYS D7  
DUMMY PLAYS S3  
RHO PLAYS D9



(And so on for two more tricks.) The computer will now display the original hands again, but this time it will show all four hands instead of just yours and the dummy's.

DEAL NO. 5  
 BID 4S  
 YOU 10  
 THEY 3

S KJ73  
 H KQJ2  
 D 63  
 C Q102

S 6  
 H A10543  
 D QJ752  
 C A7

S Q4  
 H 87  
 D AK984  
 C 9853

S A109852  
 H 96  
 D 10  
 C KJ64

WANT A RECAP OF THIS DEAL? **YES**

	N	E	S	W
TRICK NO. 1	D3	DK	D10	D2*
TRICK NO. 2	H2	H7*	H6	HA

.....

WANT TO REPLAY THIS HAND?

After looking at all four hands, you can request a recap of the deal which will show which cards were played on all thirteen tricks. (The asterisk indicates which card was led on each trick.) Finally, in response to WANT TO REPLAY THIS HAND?, you can enter **YES**, **NO**, **SAVE** to save the deal on cassette, or **LOAD** to load a different deal from cassette.

## HOW TO SET UP YOUR OWN DEAL

With Option 2, SET UP YOUR OWN DEAL, you can specify exactly which cards will be in all four hands. You can use this option, for instance, to play out the deals listed in many newspaper columns on bridge (and it's much easier than trying to sort out the cards in a standard deck!). Once the deal is set up, you can save the hands on cassette and/or play out your hand immediately.

WHICH OPTION WOULD YOU LIKE? **2**

WHAT DEAL NO.? **1**

EAST HAND S? **6**  
 EAST HAND H? **A10543**  
 EAST HAND D? **QJ752**  
 EAST HAND C? **A7**  
 SOUTH HAND H? **96**  
 SOUTH HAND D? **10**  
 SOUTH HAND C? **KJ64**

(And so forth for North and West.) Enter the letter **V** in place of the lists of cards for a void suit (i.e. for a hand with no cards of that suit). The **DEAL NO.** is simply a reference number for future use if you save the deal on cassette. The screen will now erase and the hands will be displayed just as you entered them. Then:

**WANT TO SAVE THIS DEAL? YES**  
**WANT TO PLAY THIS HAND? YES**

Enter **YES** in response to **WANT TO SAVE THIS DEAL** to write the deal on cassette. Then enter **YES** in response to **WANT TO PLAY THIS HAND** if you'd like to play it out immediately. The computer will then display the North and South (the dummy's and your) hands and ask:

**WHAT CONTRACT?**

From here, the procedure is the same as that outlined above for Option 1. Of course, you should enter a contract rather than **SKIP** or **PASS** to play out the deal you have just created.

## **HOW TO LOAD AND PLAY A DEAL FROM TAPE**

If you have previously saved a deal on cassette tape as described earlier, you can reload it with Option 3:

**WHICH OPTION WOULD YOU LIKE? 3**

Place the cassette tape in your cassette player, and find the location on the tape of the deal you want to load. Then press **PLAY** on the cassette player, and the computer will commence loading that deal.

## **HOW TO DEAL SPECIAL DEALS**

With Options 4 and 5, you can generate and play (or save on cassette) special deals which meet your specifications for high card points. You simply indicate the maximum and minimum number of high card points which you would like to share with your partner. The computer will then commence dealing, saving only those deals that fall within the specified parameters. For example:

**WHICH OPTION WOULD YOU LIKE? 4**

**WHAT SET OF HANDS? 1**

**WANT TO SKIP TO A DEAL HIGHER THAN NO. 1? YES**

**SKIP TO WHAT DEAL? 3**

**PUT BLANK TAPE IN TAPE UNIT. THEN ADVANCE TAPE SLIGHTLY.**

**PRESS "PLAY" & "RECORD".**

**WHAT IS THE MINIMUM NUMBER OF HCP? 20**

**WHAT IS THE MAXIMUM NUMBER OF HCP? 35**

**DO YOU WANT THE HANDS THAT ARE SKIPPED COUNTED? YES**

**PLEASE WAIT WHILE I DEAL.**

In this example, the number that you enter in response to WHAT SET OF HANDS is a "seed" for the random number generator, just as it was for Option 1. Again you can skip to a deal which occurs later in the random sequence, in this case Deal No. 3. Now the computer will begin dealing hands, displaying them on the screen as it does so. When hands are dealt which fall within your specified range of high card points, the cassette recorder will be turned on and the deal will be saved on tape (or you can play out the deal, in Option 5). If you answer **YES** to the question DO YOU WANT THE HANDS THAT ARE SKIPPED COUNTED, the program will number every deal, including those that do not fall within your specified range of high card points. Thus, the deal numbers will be the same as those generated as the program deals in Option 1 (for the same "seed" number or set of hands). If you answer **NO** to this question, only the deals that are actually saved will be numbered 1, 2, 3, etc. The program will continue dealing and saving hands **until you press the S key** on the keyboard.

## SUMMARY OF COMMANDS

In response to WHAT CONTRACT? you can enter:

- |             |   |
|-------------|---|
| A. NORTH    | — Hands will be rotated so that                               |
| B. EAST     | the specified hand will fall into                             |
| C. WEST     | your position and become yours.                               |
| D. SKIP     | — Skip to another deal in the set.                            |
| E. PASS     | — Skip to next deal in the same set.                          |
| F. Contract | — (E.g. 4H) Declare the specified contract and commence play. |

In response to WHAT PLAY FROM DUMMY? or WHAT PLAY FROM YOUR HAND? you can enter:

- |          |   |
|----------|---|
| A. LAST  | — Look at cards from last trick.                                  |
| B. STOP  | — Discontinue playing this hand.                                  |
| C. CLAIM | — Claim remaining tricks. Computer finishes playing out the hand. |
| D. Card  | — (E.g. C7) Play the specified card.                              |

In response to WANT TO PLAY THIS HAND AGAIN? you can enter:

- |         |   |
|---------|---|
| A. YES  | — Play this hand again.                     |
| B. NO   | — Don't play hand again, move to next deal. |
| C. LOAD | — Load a deal from cassette tape.           |
| D. SAVE | — Save this deal on cassette tape.          |

If you answer **YES** to WANT TO PLAY THIS HAND AGAIN?, you will then be asked: WANT DEFENSE HANDS SHUFFLED? Enter:

- |        |   |
|--------|---|
| A. YES | — Will play the hand again after shuffling the East and West hands. |
| B. NO  | — Will play the hand again with no alterations.                     |